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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/678,676	10/03/2003	Patrick H. Hool	1-24350	9976

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EXAMINER	
BERTHEAUD, PETER JOHN	

ART UNIT	PAPER NUMBER
3746	

DATE MAILED: 09/13/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

Office Action Summary	**Application No.** 10/678,676	**Applicant(s)** HOOL ET AL.	
	Examiner Peter J. Bertheaud	**Art Unit** 3746	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 October 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-34* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-34* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *03 October 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date *1/23/06, 4/4/05*.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☒ Other: *3/14/05, 1/7/04*.

DETAILED ACTION

Specification

1. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

The abstract of the disclosure is objected to because it exceeds the 150 word limit. Correction is required. See MPEP § 608.01(b).

2. The use of the trademark TEFLON has been noted in this application. It should be capitalized wherever it appears and be accompanied by the generic terminology.

Although the use of trademarks is permissible in patent applications, the proprietary nature of the marks should be respected and every effort made to prevent their use in any manner which might adversely affect their validity as trademarks.

Claim Objections

3. The claims are objected to because they include reference characters which are not enclosed within parentheses.

Reference characters corresponding to elements recited in the detailed description of the drawings and used in conjunction with the recitation of the same element or group of elements in the claims should be enclosed within parentheses so as to avoid confusion with other numbers or characters which may appear in the claims. See MPEP § 608.01(m).

In claim 2, lines 2 and 3, the reference character (A) should be enclosed within parenthesis.

In claim 4, lines 2-4, the reference characters (A) and (R_4) should be in parenthesis.

In claim 7, lines 2-4, the reference characters (A) and (R_3) should be in parenthesis.

In claim 12, lines 2-4, the reference characters (A), (R_1), and (R_4) should be in parenthesis.

In claim 14, lines 2-4, the reference characters (A) and (R_4) should be in parenthesis.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claim 18 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In line 2, the phrase "at least one of Polyetrafluoroethylene and carbon fiber" is unclear because the phrase "at least one of" usually warrants the term "or" instead of "and", which is the case here. If the phrase appears as intended a

clearer version of the claim must be written in order for one to determine its meaning. As it is, the claim is indefinite.

6. Claim 19 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In line 2, the phrase "when said seal is seating on said inlet flange" is unclear because the term "seating" is usually used as a noun or an adjective, but in this case it is being used as a verb. It is believed that the term "sitting" was intended and would make the claim clear if changed. If the term appears as intended a clearer version of the claim must be written in order for one to determine its meaning. As it is, the claim is indefinite.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1-4 are rejected under 35 U.S.C. 102(b) as being anticipated by Losenno (U.S. Patent No. 5,865,350).

Losenno discloses a pump apparatus essentially as claimed, including for example, a housing (4) having a bore (14) formed therethrough; a piston (16) disposed within said bore for reciprocal movement therein; an annular seal (20) disposed around said piston for reciprocal movement thereon, said piston having at least one passageway formed therein (32), said passageway, said piston, and said annular seal cooperating to form a check valve assembly (in conjunction with 42, 12, 38, 36, and 40), said check valve assembly dividing said bore into an inlet chamber (30) and a pumping chamber, said annular seal being moveable to a first position relative to said piston in which said check valve assembly is in a flow-through position to fill said pump chamber with fluid from said inlet chamber during a fluid inlet stroke (see col. 2, lines 60-64), said annular seal being moveable to a second position relative to said piston in which said check valve assembly is closed to pressurize the fluid within the pumping chamber during a pumping stroke; a fluid inlet (28) communicably connected to said inlet chamber (30) and adapted to supply said inlet chamber with fluid; and a fluid outlet (40) communicably connected to said pumping chamber and adapted to release pressurized fluid from said pumping chamber. Losenno also discloses that the piston comprises an inlet flange (18) extending outwardly substantially perpendicular to vertical axis of the piston, and that the at least one passageway (32) is in the inlet flange and extends longitudinally and has a semi-circular cross-section machined through. Losenno finally discloses that at least one passageway in said inlet flange has an inner radius defined from the vertical axis that is larger than an inner radius of said seal defined from the same axis.

The reference thus reads on the claims.

9. Claims 15, 19-21, and 23-34 are rejected under 35 U.S.C. 102(b) as being anticipated by Chen (U.S. Patent No. 5,533,879).

Chen discloses a pump apparatus essentially as claimed, including for example, a housing (11) having a bore (42) formed therethrough; a piston (18) disposed within said bore for reciprocal movement therein; an inlet flange (34), said inlet flange extending outwardly from said piston, said inlet flange having at least one passageway (30) formed therein; a retaining flange, said retaining flange (31) extending outwardly from said piston, said retaining flange having at least one passageway (32) formed therein; an intermediate portion, said intermediate portion disposed between said inlet flange and said retaining flange, said intermediate portion having at least one passageway formed therein, said at least one passageway formed in said retaining flange being communicable with said at least one passageway formed in said intermediate portion of said piston; an annular seal (27) disposed around said intermediate portion of said piston, said seal slidingly engaging the walls of said bore, said seal and said piston cooperating to form a check valve assembly, said bore being divided into an inlet chamber (41) and a pumping chamber (42) by said check valve assembly, said seal being moveable to a first position spaced apart from said inlet flange such that said check valve assembly is in a flow-through position to allow fluid to fill the pumping chamber, said seal being moveable to a second position sealing against said inlet flange such that said check valve assembly is in a closed position to allow fluid within said pumping chamber to be pressurized during movement of said piston in a pumping stroke (see col. 2 line 42 – col. 3 line 3); a fluid inlet (23) communicably connected to said inlet chamber and adapted to supply said inlet chamber with fluid; and a fluid outlet (21) communicably connected to said pumping chamber and adapted to release pressurized fluid from said pumping chamber. Chen also discloses that the outer peripheral surface of the retaining flange and the intermediate portion, have a non-circular transverse section and that the check valve is in the closed position when said seal is resting on said inlet flange

The reference thus reads on the claims.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

11. Claims 5-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Losenno (U.S. Patent No. 5,865,350) as applied above, in view of Chou (U.S. Patent No. 6,514,058).

Losenno, as applied above, discloses all the limitations substantially as claimed except for a retaining flange that contains a grooved passageway with a semi-circular cross-section that will be communicably connected with the passageway in the inlet flange. Losenno also fails to disclose that the retaining flange has an inner radius defined from the longitudinal axis that is smaller than an inner radius of the seal defined and centered on the same axis.

Chou teaches a piston apparatus defining an annular groove (13), a sealing ring (2), and a retaining flange (10) having 3 or more openings (14). Chou further teaches that the openings in the retaining flange have semi-circular cross section and that the retaining flange has an inner radius defined from the longitudinal axis that is smaller than an inner radius of the seal defined and centered on the same axis (see Fig 7, col.

3, lines 37-43, and col. 4, lines 26-30). Chou teaches that this would be advantageous because it allows fluid to flow through the piston and into the pumping chamber.

Therefore, it would have been obvious to one skilled in the art at the time of invention to modify the pump apparatus of Losenno by adding the retaining flange, as taught by Chou, in order to more easily allow fluid to flow through the piston and into the pumping chamber.

12. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over the above patents in reference to claim 5, in view of Godron (U.S. Patent No. 2,048,258).

The references as applied to claim 5 disclose all the limitations substantially as claimed except for the seal having at least one passageway that is communicably connected to a passageway in the piston when the check valve assembly is in flow-through position.

Godron teaches a piston apparatus defining an annular groove (10), a sealing ring (26a), a retaining flange, an inlet flange, and an intermediate portion. Godron further teaches that the seal has at least one passageway that is communicably connected to a passageway in the piston when the check valve assembly is in flow-through position (see col. 3, lines 30-43) and that this would be advantageous because it allows fluid to easily flow from the inlet passageway, through the seal, and around the retaining flange.

Therefore, it would have been obvious to one skilled in the art at the time of invention to modify the pump apparatus of claim 5 by adding the passageway through the seal, as taught by Godron, in order to more easily allow fluid to flow through the piston and into the pumping chamber.

13. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over the above patents in reference to claim 13, in view of Chen (U.S. Patent No. 5,533,879).

The references as applied to claim 13 disclose all the limitations substantially as claimed except for the passageway in said seal having an outer radius that is smaller than an inner radius of the passageway through the inlet flange.

Chen teaches a pump apparatus defining a piston with an annular groove, a sealing ring (33), a retaining flange (31) with at least one opening, an inlet flange (34) with at least one opening, and an intermediate portion with at least one opening. Chen further teaches that the inner radius of the passageway in the inlet flange is larger than the outer radius of the seal surface that rests on the inlet flange (see col. 2, lines 53-59). This would mean that any passageway through the seal would have an outer radius smaller than the inner radius of the passageway through the inlet flange. Chen teaches that this would be advantageous because it provides the sealing ring a place to rest when blocking the fluid flow through the piston.

Therefore, it would have been obvious to one skilled in the art at the time of invention to modify the pump apparatus of claim 5 by modifying the inlet flange's inner radius to be larger than the outer radius of the seal surface that rests on the inlet flange, as taught by Chen, in order to make sure that the outer radius of the seal's passageway is smaller than the inner radius of the inlet flange, so that flow will be blocked when the piston is in a non-flow-through position.

14. Claims 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over the above patents in reference to claim 5, in view of Graham (U.S. Patent No. 3,224,378).

The references as applied to claim 5 disclose all the limitations substantially as claimed except for an intermediate portion, disposed between the inlet flange and the retaining flange, having at least one axially grooved passageway with a semi-circular cross-section.

Graham teaches a piston apparatus defining an annular groove, a sealing ring (52), a retaining flange (44), an inlet flange (46) with at least one opening, and an intermediate portion (49). Graham further teaches that the intermediate portion has at least one axially grooved passageway with a semi-circular cross-section (see Figures 7-15) and that this would be advantageous because it allows fluid to easily flow from the inlet passageway, around the retaining flange, and through the piston.

Therefore, it would have been obvious to one skilled in the art at the time of invention to modify the pump apparatus of Losenno and Chou by adding the passageway through the intermediate portion, as taught by Graham, in order to more easily allow fluid to flow through inlet flange and intermediate portion, and into the pumping chamber.

15. Claims 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over the above patents in reference to claim 10, in view of Chen (U.S. Patent No. 5,533,879).

The references as applied to claim 10 disclose all the limitations substantially as claimed except for the passageways in the intermediate portion, inlet flange, and retaining flange, being communicably connected when the check valve is in flow through position. The references also fail to disclose that the passageway in the intermediate portion has an outer radius that is smaller than an inner radius of the passageway in the inlet flange.

Chen teaches a pump apparatus defining a piston with an annular groove, a sealing ring (33), a retaining flange (31) with at least one opening, an inlet flange (34) with at least one opening, and an intermediate portion with at least one opening. Chen further teaches that the passageways in the intermediate portion, the inlet flange, and the retaining flange are communicably connected when the check valve is in flow-through position (see col. 2, lines 42-53). Chen still further teaches that the passageway in the intermediate portion has an outer radius that is smaller than an inner radius of the passageway in said inlet flange (see Figure 4 and col. 2, lines 21-29) and that this would be advantageous because it allows the sealing ring a place to rest and block the flow of fluid when the check valve is not in flow-through position.

Therefore, it would have been obvious to one skilled in the art at the time of invention to modify the pump apparatus described in claim 10 by modifying the retaining flange, the intermediate portion, and inlet flange, as taught by Chen, in order to make the three passageways communicably connected and allow the retaining flange and the intermediate portion to share the same passageway in an effort to make the piston more cost effective.

16. Claims 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chen (U.S. Patent No. 5,533,879) as applied above, in view of Losenno (U.S. Patent No. 5,865,350).

Chen, as applied above, discloses all the limitations substantially as claimed except for an inlet flange that contains a grooved passageway with a semi-circular cross-section machined through.

Losenno teaches a pump apparatus defining a housing having a bore formed therethrough; a piston (16) disposed within said bore for reciprocal movement therein; an annular seal (20) disposed around said piston for reciprocal movement thereon and an inlet flange that contains a grooved passageway with semi-circular cross-section (see col. 2, lines 60-63). Losenno further teaches that this would be advantageous because fluid can easily flow from the inlet chamber through the openings and into the next part of the piston.

Therefore, it would have been obvious to one skilled in the art at the time of invention to modify the pump apparatus of Chen by modifying the passageway through the inlet flange to have a semi-circular cross-section, as taught by Losenno, in order to more easily allow fluid to flow from the inlet flange to the intermediate portion, through the retaining flange, and into the pumping chamber.

17. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chen (U.S. Patent No. 5,533,879) as applied above, in view of Chou (U.S. Patent No. 6,514,058).

Chen, as applied above, discloses all the limitations substantially as claimed except for a retaining flange that contains an axially grooved passageway with a semi-circular cross-section.

Chou teaches a piston apparatus defining an annular groove (13), a sealing ring (2), and a retaining flange (10) having 3 or more openings (14). Chou further teaches that the openings in the retaining flange have semi-circular cross section (see Fig 7 and col. 4, lines 26-30) and that this would be advantageous because it allows fluid to flow through the piston and into the pumping chamber.

Therefore, it would have been obvious to one skilled in the art at the time of invention to modify the pump apparatus of Chen by modifying the grooves in the retaining flange to have semi-circular cross-section, as taught by Chou, in order to more easily allow fluid to flow from the inlet flange to the intermediate portion, through the retaining flange, and into the pumping chamber.

18. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chen (U.S. Patent No. 5,533,879) as applied above, in view of Farley (U.S. Patent No. 5,695,197).

Chen, as applied above, discloses all the limitations substantially as claimed except for an annular seal comprised of at least one of Polyetrafluoroethylene and Carbon Fiber.

Farley teaches a sealing ring (50) for preventing flow of a fluid under pressure between a first surface and a second surface spaced-apart from the first surface. Farley further teaches that the sealing ring contains Polyetrafluoroethylene and Carbon Fiber (see Abstract, lines 3-8, col. 2, lines 48-67, or col. 4, lines 36-54) and that this would be advantageous because they make the seal much more durable as well as highly melt resistant.

Therefore, it would have been obvious to one skilled in the art at the time of invention to modify the pump apparatus of Chen by using Polyetrafluoroethylene and Carbon Fiber to make the sealing ring, as taught by Farley, in order to make the seal more durable and highly melt resistant.

19. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chen (U.S. Patent No. 5,533,879) as applied above, in view of Losenno (U.S. Patent No. 5,865,350), Graham (U.S. Patent No. 3,224,378), and Chou (U.S. Patent No. 6,514,058).

Chen, as applied above, discloses all the limitations substantially as claimed except for the inlet flange having a plurality of longitudinally extending grooves with semi-circular cross-section formed in the outer surface thereof, said intermediate portion having a plurality of longitudinally extending grooves with semi-circular cross-section formed in the outer surface thereof, said plurality of grooves in said intermediate portion being communicably connected to said plurality of grooves in said inlet flange, said retaining flange having a plurality of longitudinally extending grooves with semi-circular cross-section formed in the outer surface thereof.

Losenno teaches a pump apparatus defining a housing having a bore formed therethrough; a piston (16) disposed within said bore for reciprocal movement therein; an annular seal (20) disposed around said piston for reciprocal movement thereon and an inlet flange having a plurality of longitudinally extending grooves with semi-circular cross-section (see col. 2, lines 60-63). Losenno further teaches that this would be advantageous because fluid can easily flow from the inlet chamber through the openings and into the next part of the piston.

Graham teaches a piston apparatus defining an annular groove, a sealing ring (52), a retaining flange (44), an inlet flange (46), and an intermediate portion (49). Graham further teaches that the intermediate portion has a plurality of longitudinally extending grooves with a semi-circular cross-section (see Figures 7-15) and that this would be advantageous because it allows fluid to easily flow from the inlet passageway, around the retaining flange, and through the piston.

Chou teaches a piston apparatus defining an annular groove (13), a sealing ring (2), and a retaining flange (10). Chou further teaches that the retaining flange has a plurality of longitudinally extending grooves with semi-circular cross section (see Fig 7 and col. 4, lines 26-30) and that this would be advantageous because it allows fluid to flow through the piston and into the pumping chamber.

Therefore, it would have been obvious to one skilled in the art at the time of invention to modify the pump apparatus of Chen by modifying the grooves through the inlet flange, retaining flange, and intermediate portion of the piston to be longitudinally extending grooves with semi-circular cross section, as taught by Losenno, Graham, and Chou, in order to more easily allow fluid to flow through the piston and into the pumping chamber.

Conclusion

20. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. These references are noted in the attached form 892..

21. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Peter J. Bertheaud whose telephone number is (571) 272-3476. The examiner can normally be reached on M-F 9am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Anthony Stashick can be reached on (571) 272-4561. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

PJB
PJB

Anthony Stashick

ANTHONY D. STASHICK
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